

WHAT IS CLAIMED IS:

1. A data processing apparatus for processing data read out from an information storage medium,  
data to be recorded on the information storage  
5 medium for respective recording units being a data block with sync codes,  
the data block being a block generated by inserting sync codes at predetermined intervals for sector data,  
10 the sector data being generated from some data of the data block with error correction codes,  
the data block containing data in row and column directions,  
one data sequence containing at least two sync  
15 frames;  
one sync frame containing a sync code and some data of the sector data,  
a demodulated data sequence obtained by removing the sync codes from one data sequence being data  
20 that contains the error correction codes, and error correction being able to be attained for each demodulated data sequence,  
the data processing apparatus comprising:  
a syndrome calculation unit configured to  
25 calculate a syndrome of the demodulated data sequence,  
and  
the syndrome calculation unit including a

calculation unit configured to make a calculation required to realize syndrome calculation of demodulated data for each sync frame obtained by excluding one sync frame.

5           2. An apparatus according to claim 1, further comprising:

          a storage unit configured to store the demodulated data sequence; and

          an error correction unit configured to detect and  
10       correct any errors contained in the demodulated data sequence stored in the storage unit,

          wherein the syndrome calculation unit calculates the syndrome of the demodulated data sequence in parallel with the storage process of the demodulated  
15       data sequence by the storage unit.

          3. An apparatus according to claim 1, further comprising:

          a calculation result storage unit configured to store the syndrome calculation result calculated by  
20       the syndrome calculation unit; and

          a management unit configured to manage a read-out state of data from the information storage medium for respective sync frames,

          wherein the syndrome calculation unit calculates  
25       the syndrome of the demodulated data sequence on the basis of the read-out state of data managed by the management unit.

4. An apparatus according to claim 3, wherein the error correction unit detects and corrects any errors on the basis of the syndrome calculation result stored in the calculation result storage unit, and the  
5 read-out state of data managed by the management unit.

5. A data processing method for processing data read out from an information storage medium,  
data to be recorded on the information storage medium for respective recording units being a data  
10 block with sync codes,  
the data block being a block generated by inserting sync codes at predetermined intervals for sector data,  
the sector data being generated from some data of  
15 the data block with error correction codes,  
the data block containing data in row and column directions,  
one data sequence containing at least two sync frames;

20 one sync frame containing a sync code and some data of the sector data,  
a demodulated data sequence obtained by removing the sync codes from one data sequence being data that contains the error correction codes, and error  
25 correction being able to be attained for each demodulated data sequence,  
the data processing method comprising:

making a calculation required to realize  
a syndrome calculation of demodulated data for each  
sync frame obtained by excluding one sync frame upon  
calculating a syndrome of the demodulated data  
5 sequence.

6. A method according to claim 5, further  
comprising:

calculating, when the demodulated data sequence is  
stored and any errors contained in the demodulated data  
10 sequence are to be detected and corrected, the syndrome  
of the demodulated data sequence in parallel with the  
storage process of the demodulated data sequence.

7. A method according to claim 5, further  
comprising:

15 managing a read-out state of data from the  
information storage medium for respective sync frames,  
and calculating the syndrome of the demodulated data  
sequence on the basis of the managed read-out state of  
data.

20 8. A method according to claim 7, wherein the  
calculated syndrome calculation result is stored, and  
any errors are detected and corrected on the basis of  
the stored syndrome calculation result and the managed  
read-out state of data.